



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/771,752      | 02/04/2004  | Nicholas J. Pinto    | UPR-3000            | 3663             |

7590

06/20/2006

Patent Law Offices of  
Heath W. Hoglund  
256 Eleanor Roosevelt  
San Juan, PR 00918

|          |
|----------|
| EXAMINER |
|----------|

DRODGE, JOSEPH W

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1723

DATE MAILED: 06/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/771,752

Applicant(s)

PINTO ET AL.

Examiner

Joseph W. Drodge

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

The Declaration or Affidavit under 37 CFR 1.132 filed May 3, 2006 is sufficient to overcome the rejection of claims 1-14 based upon the Kanel patent of record.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(f) he did not himself invent the subject matter sought to be patented.

Claims 9 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Pron et al patent 6,753,041. Pron et al disclose dissolving PANiEB (polyaniline in emerald base form) in a solution, confining the dissolved PANiEB within pores of a porous substrate and evaporating the solution to solidify, hence confine the PANiEB (see column 3, line 38-column 4, line 18). The dissolved material remains as in emerald or highly conducting form, without phase separation into any other form of polyaniline as a result of its being confined within the pores by the solidification (column 4, lines 1-18). Note that column 4, line 8 states that “no secondary product is formed”. For claim 14, the solidification of polyaniline within the filter pores pins the material to the substrate pores and retains its conductive charge (column 4, lines 5-8).

Claims 1-14 are rejected under 35 U.S.C. 102(a) and 102 (f) as being clearly anticipated by the Bengoechea et al publication. The Bengoechea publication discloses suppressing microphase separation during preparation of PANiEB or emerald form of polyaniline polymer-containing membrane films, comprising dissolving the polymer in a solution of NMP, providing of an anapore membrane having parallel cylindrical pores, placing the membrane in the solution, removing the solution so as to confine the solution in the membrane pores, then evaporating the solution to result in formation of a film of PANiEB and suppressing the formation of other aniline forms including PNB and LEB. (Abstract and paragraph bridging pages 2-3). The pores are of an alumina anapore membrane and are cylindrical and parallel, and extend from one surface to an opposite membrane surface and have a pore size of 20 nm (page 3, 2<sup>nd</sup> full paragraph) as in claims 2-4,6-8, and 11-13. The phase separation is stated to be suppressed by interaction or "pinning" of solution and the pores or pore walls (Abstract) as needed for claims 1,5,9 and 14.

Claims 7,8 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin et al patent 5,174,883 in view of Pron et al patent 6,753,041.

Martin et al discloses a membrane film of cylindrical disc form and of the form of a Nucleopore or anapore type membrane, having uniform, parallel and cylindrical pores of sub-micron size diameter, in which the pores are filled with or impregnated with an electrically conductive medium (column 2, lines 17-31 and column 4, lines 11-34). The claims differ in requiring the conductive impregnating medium to be emerald form of

Art Unit: 1723

polyaniline (PANiEB). Pron et al teach such impregnating material at column 3, lines 41- column 4, line 18). It would have been obvious to one of ordinary skill in the art to have utilized the PANiEb impregnating material of Pron et al into the membrane of Martin et al, in view of the superior conductive properties of such polyaniline.

The claims further differ from Martin et al in the processes of making the membrane film, however when the reference teaches a product that appears to be the same as, or an obvious variant of, the product set forth in a product-by-process claim although produced by a different process. See *In re Marosi*, 710 F.2d 799, 218 USPQ 289 (Fed. Cir. 1983) and *In re Thorpe*, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985). See also MPEP § 2113.

When the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to applicant to establish that their product is patentably distinct and not the examiner to show the same process as making. *In re Brown*, 173 USPQ 685 and *In re Fessmann*, 180 USPQ 324.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pron et al patent 6,753,041 in view of Martin et al patent 5,174,883 and the Cao et al publication.

Pron et al disclose dissolving PANiEB (polyaniline in emerald base form) in a solution, confining the dissolved PANiEB within pores of a porous substrate and evaporating the solution to solidify, hence confine the PANiEB (see column 3, line 38-column 4, line 18). The dissolved material remains as in emerald or highly conducting form, without phase separation into any other form of polyaniline as a result of its being confined within the pores by the solidification (column 4, lines 1-18). Note that column 4, line 8 states that "no secondary product is formed". For claim 14, the solidification of polyaniline within the filter pores pins the material to the substrate pores and retains its conductive charge (column 4, lines 5-8).

Art Unit: 1723

The claims differ in requiring the dissolving solution for the aniline being NMP; Pron appears to teach away from use of NMP, stating that its use requires disadvantageous doping of the polyaniline, since NMP causes the material to become insulating. However, Cao et al teach that NMP has the advantage of being a strong solvent for PANiEB (emerald form of aniline), (see page 187, 1<sup>st</sup> and 2<sup>nd</sup> paragraphs and that the ultimate conductivity of the polyaniline is strongly influenced by addition of co-solvents and counterions with the primary solvent (page 188, 1<sup>st</sup> paragraph, page 189, 1<sup>st</sup> full paragraph of the 2<sup>nd</sup> column and page 190, Conclusion). It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Pron et al method by utilizing NMP as the solvent, in combination with at least one co-solvent or counterion (to maintain or increase polyaniline conductivity), as taught by Cao et al, to enhance the solubility of the PANiEB.

The claims also differ in requiring the substrate be a cylindrical type membrane, or more particularly requiring the substrate to be an "anapore" membrane. Pron discloses substrates comprising filters having micron or sub-micron size pores, hence substrates comprising microfilters or membranes (See Examples 2 and 4). Martin et al teach conducting polymers deposited and confined within the micron-size pores of nucleopore, or anapore membranes, after evaporation of polyvinylpyrrolidone solvent (especially column 4, lines 11-34 and 56-64). It would have been obvious to one of ordinary skill in the art to have selected a cylindrical or nucleopore or anapore membrane as the filter substrate of Pron et al, as taught by Martin et al, to construct a

Art Unit: 1723

structure having a fast, accurate electrochemical response, and having low capacitive currents (see Martin at column 2, lines 10-17).

Regarding claims 2-4 and 6-8, see details of the membranes taught by Martin et al at column 4, lines 11-34, etc. regarding parallel cylindrical pores extending through the membrane and sub-micron to nanometer pore size.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pron et al in view of the Cao et al publication. Claim 10 differs in requiring the dissolving solution for the aniline being NMP; Pron appears to teach away from use of NMP, stating that its use requires disadvantageous doping of the polyaniline, since NMP causes the material to become insulating. However, Cao et al teach that NMP has the advantage of being a strong solvent for PANiEB (emerald form of aniline), (see page 187, 1<sup>st</sup> and 2<sup>nd</sup> paragraphs and that the ultimate conductivity of the polyaniline is strongly influenced by addition of co-solvents and counterions with the primary solvent (page 188, 1<sup>st</sup> paragraph, page 189, 1<sup>st</sup> full paragraph of the 2<sup>nd</sup> column and page 190, Conclusion). It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Pron et al method by utilizing NMP as the solvent, in combination with at least one co-solvent or counterion (to maintain or increase polyaniline conductivity), as taught by Cao et al, to enhance the solubility of the PANiEB.



Art Unit: 1723

Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pron et al in view of the Cao et al publication as applied to claim 10 above, and further in view of Martin et al. Claims 11 and 13 differ in requiring the substrate be a cylindrical type membrane, while claim 12 more particularly requires the substrate to be an "anapore" membrane. Pron discloses substrates comprising filters having micron or sub-micron size pores, hence substrates comprising microfilters or membranes (See Examples 2 and 4). Martin et al teach conducting polymers deposited and confined within the micron-size pores of nucleopore, or anapore membranes, after evaporation of polyvinylpyrrolidone solvent (especially column 4, lines 11-34 and 56-64). It would have been obvious to one of ordinary skill in the art to have selected a cylindrical or nucleopore or anapore membrane as the filter substrate of Pron et al, as taught by Martin et al, to construct a structure having a fast, accurate electrochemical response, and having low capacitive currents (see Martin at column 2, lines 10-17).

Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

Art Unit: 1723

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Drodge at telephone number 571-272-1140. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker, can be reached at 571-272-1151. The fax phone number for the examining group where this application is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or Public PAIR, and through Private PAIR only for unpublished applications. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JWD

June 13, 2006

  
JOSEPH DRODGE  
PRIMARY EXAMINER